one whose end terminals are joined to bridges of said second group wherein a tree path of one of the bridges of said second group connected to one end terminal of a cross-link is not a segment of a tree path of the other bridge of the second group connected to another end terminal said cross-link, and wherein the tree path of the other bridge of the second group is not a segment of the tree path of said one bridge of said second group.

16. The apparatus of Claim 1 wherein each bridge of said second group of bridges further includes;

means for storing an end station location (ESL) table associating each end station with bridges in the second group near each end station;

means for storing a bridge address (BA) table associating each bridge of said second group with a medium access control (MAC) address;

means for storing a bridge forwarding (BF) table for indicating a path of the associated bridge that leads to a next hop along a best path found for forwarding a frame; and

means responsive to a received frame and information stored in said BA, ESL and BF tables for selecting a path to an end station identified in destination information incorporated as part of said received frame.

17. Apparatus for determining a best path for forwarding a frame received at a bridge in a system comprised of a plurality of interconnected local area networks (LANS) each having a plurality of end stations, and a spanning tree incorporating a plurality of bridges of first and second groups for loop-free forwarding a frame from a source end station to a destination end station wherein said source and destination end stations may reside in different LANS, said bridges of said first and second groups having means for determining a tree path for loop-free forwarding of said frame; and

said second group of bridges further having means for determining if an alternate path exists for loop-free forwarding of said frame which has at least one non-tree path segment; and

means for utilizing said alternate path if it satisfies one of a group of topological criteria including: a shorter physical path; a less costly path; a path having less delay and a smaller number of hops between source and destination.

18. The apparatus of Claim 17 further comprising:

means for operating said second group of bridges to utilize said tree paths for default frame forwarding, and to utilize said alternate paths, if possible, to forward a predetermined class of frames.

19. A method for determining a path for forwarding a frame in a system having a plurality of end stations and bridges for loop-free forwarding of a frame, said bridges being of first and second groups, said first group having means for transferring a frame from an end station using a spanning tree bridge protocol which provides loop-free frame forwarding and said second group of bridges have cross-links coupling bridges in different tree paths, comprising:

a) operating all of said bridges to establish a loop-free tree path responsive to a frame identifying a source end station and a destination end station; and

b) determining presence of an alternate path shorter than the tree path determined in step (a) and employing at least one cross-link.

20. The method of Claim 19 further comprising:

d) employing the path determined in step (b) when it is shorter than the tree path determined in step (a).

21. The method of Claim 19 further comprising:

c) employing the path determined in step (a) when it is shorter than the tree path determined in step (b).

22. The method of Claim 19 further comprising:

(c) operating said second group of bridges to process path data incorporating cross-links to determine possible paths employing bridges in the system for forwarding frames; and

d) operating said first and second groups of bridges to establish a loop-free frame forwarding path while said second group of bridges are performing step (c).

23. The method of Claim 19 wherein step (a) further comprises:

(c) conveying to other bridges of said second group information representing topology known to the conveying bridge;

(d) conveying to other bridges of the second group information identifying bridges of the second group which are a source for frames and a destination for frames;

(e) conveying to other bridges of the second group topology information known to bridges of the second group other than the conveying bridge; and

(f) storing information received from other bridges of said second group for determining an alternate path shorter than a tree path.

24. The method of Claim 19 further comprising:

(c) determining at each second group of bridges, if another bridge of said second group is directly connected thereto by a cross-link which is not a tree path; and

(d) determining an alternate path further including means for examining valid cross-links for use as segments of an alternate path.

25. The method of Claim 19 further comprising:

each bridge of said second group:

(c) storing an end station location (ESL) table associating each end station with bridges in the second group near each end station;

(d) storing a bridge address (BA) table associating each bridge of said second group with a medium access control (MAC) address;

(e) storing a bridge forwarding (BF) table for indicating a path of the associated bridge that leads to a next hop along a best path found for forwarding a frame; and

(f) responsive to a received frame and information stored in said BA, ESL and BF tables, selecting a path to an end station identified in destination information incorporated as part of said received frame.

26. The method of Claim 19 further comprising:

operating said second group of bridges to utilize said tree paths for default frame forwarding, and utilizing said alternate paths, if possible, to forward a predetermined class of frames.

27. The apparatus of Claim 1 wherein bridges of said second group are respectively arranged upstream and downstream of an intervening bridge of said first group in a common tree path and said bridges of said second group including means for encapsulating a received frame with a source address and a destination address enabling transfer through the intervening bridge; wherein

(a) where a cross-link incident on a said downstream bridge is a segment on said alternate path, said transfer through the intervening bridge is in the downstream direction, and

(b) where a cross-link incident on said upstream bridge is a segment on said alternate path, said transfer through the intervening bridge is in the upstream direction.

28. The apparatus of Claim 27 wherein, when a transfer through the intervening bridge is in the downstream direction,

said intervening bridge directing the encapsulated frame to said downstream bridge responsive to said destination address in accordance with normal frame forwarding over a tree path; and

said down stream bridge including means for stripping the encapsulated portions of an encapsulated frame and for forwarding said stripped encapsulated frame over a remaining portion of the forwarding path to an end station identified by a destination address incorporated as part of the unencapsulated frame; and

when said transfer through the intervening bridge is in the upstream direction,

said intervening bridge directing the encapsulated frame to said upstream bridge responsive to said destination address in accordance with normal frame forwarding over a tree path; and

said upstream bridge including means for stripping the encapsulated portions of an encapsulated frame and for forwarding said stripped encapsulated frame over a remaining portion of the forwarding path to an end station identified by a destination address incorporated as part of the unencapsulated frame.